

LOGGED BY T. Carroll	BEGIN DATE 12-5-07	COMPLETION DATE 12-6-07	BOREHOLE LOCATION (Lat/Long or North/East and Datum) N2120795.312 / E5997775.178 (NAD83)	HOLE ID ESB-R1
DRILLING CONTRACTOR Gregg Drilling and Testing, Inc.	BOREHOLE LOCATION (Offset, Station, Line) Offset 57ft L Sta 47+58 SB Alignment		SURFACE ELEVATION 11.217 ft (NAVD88)	
DRILLING METHOD Mud Rotary	DRILL RIG Fraste Multi-drill (truck)		BOREHOLE DIAMETER 5 in. (soil); 4 in. (rock)	
SAMPLER TYPE(S) AND SIZE(S) (ID) MC (2.4"), SPT (1.4"), Shelby (2.87"), HQ Core	SPT HAMMER TYPE Automatic, 140 lbs., 30-inch drop		HAMMER EFFICIENCY, ERI 76.2%	
BOREHOLE BACKFILL AND COMPLETION Neat Cement Grout backfill	GROUNDWATER DURING DRILLING AFTER DRILLING (DATE) READINGS 3.2		TOTAL DEPTH OF BORING 98 ft	

ELEVATION (ft)	DEPTH (ft)	Material Graphics	Description	Sample Location	Sample Number	Blows per 6 In	Blows per Foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
0	0		4" ASPHALT CONCRETE.												
1	1		6" poorly-graded GRAVEL (GP), light gray, dry. [BASEROCK]												
9.22	2		CLAYEY GRAVEL with SAND (GC), loose, reddish brown, GRAVEL is fine. [FILL]												
7.22	3		Poorly graded SAND with CLAY (SP-SC), loose, dark olive brown, wet, with frequent CLAY lenses up to 1" thick, frequent white shell fragments, occasional subangular fine GRAVEL. [HYDRAULIC FILL]	S1		5	9	39							After sampling to 6', hole sloughed to 4'
	4			S2		1	2	72							
	5					1	1	1							
5.22	6		Lean CLAY with SAND (CL), medium stiff, brown, moist, SAND is fine. [BAY MUD]												
	7		Fat CLAY (CH), soft, greenish gray, wet, trace fine SAND, trace decayed vegetation, organic odor.	U3			50	87							
3.22	8														
	9		Grades with lenses of SILT and fine SAND.												
1.22	10			U4				93				TV = 0.18			
	11														
-0.78	12		Poorly graded SAND (SP), medium dense, dark gray, wet, SAND is fine to medium, frequent white shell fragments, slight cementation. [MARINE SAND]	S5		12	34	78							
	16			S6		5	12	67							
	17					5	7								
-6.78	18		Grades with SANDY CLAY lenses.												
	20			S7		9	20	78							
	21					11									
-10.78	22		Grades brown to yellowish brown, clean.	S8		3	21	100							
	23					5									
	24					16									
-12.78	25														

(continued)



Department of Transportation
Division of Engineering Services
Geotechnical Services

REPORT TITLE
BORING RECORD

DIST. 4	COUNTY S.F.	ROUTE 101	POSTMILE 8.3/9.4
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HOLE ID ESB-R1
EA 163701

PROJECT OR BRIDGE NAME
Doyle Drive Replacement Project

BRIDGE NUMBER 34-165L	PREPARED BY T. Carroll
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DATE 11-3-08	SHEET 1 of 4
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Figure

ELEVATION (ft)	DEPTH (ft)	Material Graphics	Description	Sample Location	Sample Number	Blows per 6 in	Blows per Foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
-14.78	25		Poorly graded SAND (SP), medium dense, dark gray, wet, SAND is fine to medium, frequent white shell fragments, slight cementation. [MARINE SAND] Grades very loose, with trace CLAY.		S9	4 3 5	8	78							
	26				S10	6 12 10	22	100							
-16.78	27		Poorly graded SAND with CLAY (SP-SC), medium dense, brown to yellowish brown, wet, SAND is fine to medium. [COLMA SAND]												
	28														
	29		Poorly graded SAND (SP), medium dense, dark yellowish brown, fine to medium, with light gray streaks.												
-18.78	30				S11	12 21 31	52	78							
	31		31.0', grades reddish brown with yellowish brown mottling, fine.												
-20.78	32		31.5', grades dark yellowish brown.		S12	14 26 26	52	100							
	33		32.8', 1" layer of iron-oxide staining. Grades very dense.												
-22.78	34														
	35		Grades very fine.		S13	28 42 46	88	83							
-24.78	36				S14	12 23 35	58	100							
	37														
-26.78	38														
	39														
-28.78	40		Grades with iron-oxide stained seams up to 1/2" thick.		S15	27 46 50/5"	96/11"	88							
	41														
-30.78	42		41.5', grades grayish brown.		S16	11 38 50/ 4.5"	88/10.5"	100							
	43		42.5', grades yellowish brown with frequent iron-oxide staining (up to 1" thick).												
-32.78	44														
	45		Grades dark yellowish brown, clean, very fine.		S17	35 50 48	98	83							
-34.78	46				S18	15 31 50/ 5.5"	80 11.5"	100							
	47		47.4', grades gray and iron-oxide stained seam (1/2" thick).												
-36.78	48														
	49														
-38.78	50		Grades with dark gray mottling.		S19	33 50/6"	50/6"	67							
	51				S20	14 25 35	60	100							
-40.78	52		51.9', 1" thick heavily oxidized layer, occasional pocket of weakly cemented SAND.												
	53														
-42.78	54		CLAYEY SAND (SC), dense, olive gray, moist, fine.												
	55														

(continued)



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SHEET
2 of 4

Figure

ELEVATION (ft)	DEPTH (ft)	Material Graphics	Description	Sample Location	Sample Number	Blows per 6 In	Blows per Foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
-44.78	55		CLAYEY SAND (SC), dense, olive gray, moist, fine. 55.4', grades dark greenish gray.	S21	15	58	78								
	56				25										
	57			S22	14	40	72								
	58				17										
-46.78	59				23										
	60		Grades with frequent decomposed vegetation (up to 1/8" diameter).	S23	13	44	78								
	61				16										
	62		SILTY SAND (SM), very dense, olive gray, moist, very fine, occasional fine subrounded GRAVEL.	S24	12	45	78								
	63				20										
	64				25										
-52.78	65		Poorly graded SAND with SILT (SP-SM), dense, olive gray, wet, very fine.	S25	21	67	89								
	66				31										
	67		Lean CLAY with SAND (CL), hard, light olive gray, moist, with frequent pockets of iron-oxide staining up to 1/4" diameter. [OLD BAY CLAY]	S26	11	28	78			66.5		PP = >2.25			
	68		POORLY GRADED SAND (SP), very dense, yellowish brown, dry, strong cementation. 69.0', shells in cuttings.												
	69		Lean CLAY with GRAVEL (CL), medium stiff, yellowish brown, moist, frequent shell fragments, GRAVEL is fine, subangular, with coarse to fine SAND.	S27	8	27	83								
	70				11										
	71				16										
-60.78	72		Grades without shells; grades with increase in GRAVEL content; grades with pockets of iron-oxide staining (1/4" diameter).	S28	4	36	67								
	73				12										
	74		Poorly graded SAND (SP), dense, yellowish brown, dry, strongly cemented, with seams (up to 1/2" thick) of iron-oxide staining, trace fine GRAVEL. [ALLUVIUM]		24										
	75		CLAYEY GRAVEL (GC), very dense, yellowish brown, moist, GRAVEL is sandstone fragments, angular, with occasional iron-oxide staining, predefined fracture planes, crumbles under moderate hand pressure. [RESIDUAL SOIL]	S29	60	3.5	86								
	76			S30	50	2.5	80								
	77		CLAY in cuttings.												
-66.78	78														
	79														
-68.78	80		SEDIMENTARY ROCK (Sandstone), yellowish brown, fine to medium grained, massive, moderately weathered, moderately hard, moderately fractured, common quartz vein filling, frequent healed fractures, fractures commonly filled with dark mineral precipitate, and/or disseminated dark mineral grains throughout (less than 1%).	C31				93	81						
	81														
	82														
	83														
	84			C32				100	87						
-72.78	85														

(continued)



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3 of 4

Figure

ELEVATION (ft)	DEPTH (ft)	Material Graphics	Description	Sample Location	Sample Number	Blows per 6 In	Blows per Foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks	
	85	•••••	SEDIMENTARY ROCK (Sandstone), yellowish brown, fine to medium grained, massive, moderately weathered, moderately hard, moderately fractured, common quartz vein filling, frequent healed fractures, fractures commonly filled with dark mineral precipitate, and/or disseminated dark mineral grains throughout (less than 1%). 88.0' - 89.0', fractures dip 25°4 with additional random orientations, including near vertical healed intensely fractured zone. Healed, very closely fractured zone, fractures dipping subhorizontal 25°. Grades gray to greenish gray, moderately to slightly weathered.	<div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div>										End Box 1 at 92.5'		
-74.78	86	•••••			C33				91	20						
	87	•••••														
-76.78	88	•••••														
	89	•••••														
-78.78	90	•••••														
	91	•••••														
-80.78	92	•••••				C34				98	0					
	93	•••••														
-82.78	94	•••••														
	95	•••••														
-84.78	96	•••••														
	97	•••••		C35				100	43							
-86.78	98	•••••	Borehole terminated at a depth of 98 feet on 12/6/2007.													
	99		See Boring Record Legend for soil classification chart and key to test data and sampler type.													
-88.78	100															
	101															
-90.78	102															
	103															
-92.78	104															
	105															
-94.78	106															
	107															
-96.78	108															
	109															
-98.78	110															
	111															
-100.78	112															
	113															
-102.78	114															
	115															



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Figure